

NEW SPECIES OF CALADENIA R. Br. (ORCHIDACEAE) FROM VICTORIA AND NEW SOUTH WALES, AUSTRALIA

by

G. W. CARR*

ABSTRACT

Carr, G. W. New species of *Caladenia* R. Br. (Orchidaceae) from Victoria and New South Wales, Australia. *Muelleria* 6(6): 439-447 (1988). — Two new species of *Caladenia* (section *Calonema*: Orchidaceae) are described. *C. brachyscapa* G. W. Carr is endemic in Victoria and *C. rosella* G. W. Carr is known from Victoria and New South Wales. The affinities, distribution, ecology and conservation status of the new species are discussed.

TAXONOMY

Caladenia brachyscapa G. W. Carr, sp. nov.

Species propria *C. reticulatae* R. D. Fitzg. similis ut videtur differt tamen in proprietatum combinatione: foliis anguste-linearibus, confertim longe-hirsutis; scapo brevissimo, confertim hirsuto, trichomatibus glandulosis vel sparsissimus vel absentibus; segmentis perianthii brevibus, apicem versus \pm aequaliter contractis; lamina osmophori a lamina cetera distincta; osmophorum conspicuorum sepalinorum petalinorumque trichomatibus laxae ad sub-arcte contiguus, 1-3 cellulatis, sphaericis ad allantoideis.

Herb perennating from an annually renewed tuberoid; tuberoids and most of subterranean stem not seen, but stem below leaf invested in a finely-fibrous brown tunic. *Leaf* subtended by an opposite, membranous, closed-cylindrical, minutely mucronate, truncate bract 5-6 mm long x c. 8 mm wide when opened. *Leaf* basal, hirsute, solitary, sessile, \pm erect, linear-lanceolate, 4.5-10.5 cm long x 4-6 mm wide (in fertile specimens), acute, often partly withered at anthesis; abaxial surface very densely long-hirsute, especially in lower part, with \pm patent eglandular uniseriate trichomes to 11 mm long; trichomes sparser upwards and becoming antrorse; basal cell of trichomes narrowly barrel-shaped, white-opaque, microscopically rugose, the remaining 1-5 cells extremely fine, transparent; leaf wholly green or with few to abundant deep red blotches or spots basally on the abaxial surface. *Scape* abbreviated, 3.2-12.5 cm long, 1-1.5 mm diam., slightly flexuose, rigidly erect, green to wholly light reddish-purple, densely hirsute with mostly eglandular trichomes like those of the leaf, the longest trichomes 3-7.5 mm long, decreasing in length upwards along the scape; trichomes \pm patent but towards apex of scape somewhat antrorse by flexure of the basal cell; glandular trichomes if present (occasionally), very short, confined to just below the fertile bract, 3-celled with the apical cell spherical, light red. *Sterile bract* (3-)15-45 mm below floral bract, slightly spreading, narrow-lanceolate, subulate, acute or acuminate, (9-)12-14(-17) mm long x (2-)2.5-3 mm wide, externally hirsute with sparse, very short, antrorse, eglandular trichomes, internally glabrous; margins strongly inrolled. *Floral bract* similar, (7.5-)13-15 (-17) mm x (2.5-)3-5.5(-8) mm, embracing pedicel, ovary and base of dorsal sepal; margins less inrolled. *Flower* solitary; perianth segments widely spreading though characteristic posture *in vivo* unknown, short but labellum proportionately large; floral fragrance unknown. *Pedicel* (2-)5-11(-14) mm long, shortly hirsute. *Ovary* obconic-fusiform, 5-8 mm long, 2-2.5 mm diam., shortly and densely hirsute with unequal, mostly 3-celled glandular trichomes with spherical dark red apical cells; rare longer eglandular trichomes present in some specimens. *Dorsal sepal* erect (18-)24-28 mm long, 1.2-1.8 mm wide towards base, strongly curved forward, linear-lanceolate, long-acuminate, the lamina channelled and narrowed to 0.6-0.8 mm wide below a terminal osmophore; dorsal sepal nearly glabrous except for osmophore trichomes but with few, scattered, 1-3-celled glandular trichomes internally and

* Botany Department, La Trobe University, Bundoora, Victoria, Australia 3083.

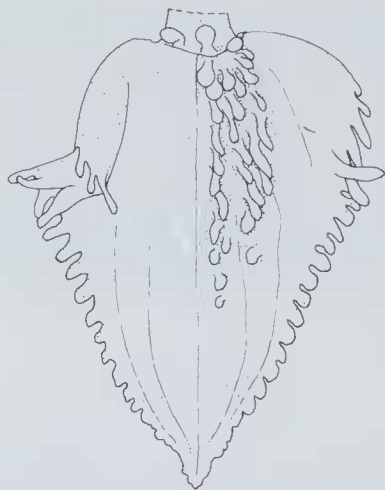


Fig. 1. *Caladenia brachyscapa*. Labellum, with the calli drawn on one half only, x 4.5. From holotype.

externally around the base; sepal pink or light red with darker red median striations on both surfaces. *Osmophore of dorsal sepal* not clearly differentiated from remainder of sepal, dark reddish-brown, \pm linear, obtuse, 5.5-7.5 mm long (rarely longer) x 0.75-1.8 mm wide, consisting of glandular trichomes between which the lamina of the osmophore is irregularly visible; spacing of trichomes less than diameter of terminal cell; trichomes with 1-3 cells, the terminal and or sub-terminal cells spherical to sausage-shaped, dark red. *Lateral sepals* (18-)20-25(-30) mm long x 2.5-3.5 mm wide, deflexed, slightly inturned, falcate, with a narrow-lanceolate lamina evenly tapering to a terminal osmophore; minimum width of lamina 0.3-1.8 mm; osmophore not or only weakly differentiated from remainder of sepal; distribution of trichomes and colour similar to those of the dorsal sepal. *Osmophores of lateral sepals* similar to those of the dorsal sepal, 6-8(-10.5) mm long x 0.6-1.5 mm wide. *Petals* widely spreading, linear or linear-lanceolate, 20-23 mm long x 1-2.3 mm wide, terminated by a linear or lanceolate, sub-acute osmophore 4.5-7 mm long x 0.6-0.8 mm wide; lamina of petaline osmophores not or only slightly differentiated from petal lamina, with a minimum width of 0.6 mm below osmophore; petals very sparsely ciliate in proximal part with 1-3-celled glandular or eglandular trichomes; colour of petals similar to lateral sepals but the adaxial median zone usually more intensely marked with red. *Labellum* articulated on a short claw \pm 1 mm long x 1.5-2.5 mm wide, broadly cordate, sub-acute, 10.5-12 mm long x 7.5-10 mm wide at about the middle, apparently carnos throughout *in vivo*, very broadly channelled, \pm erect at base and curved forward, the apex recurved under the lamina; margin of labellum from the proximal one-sixth or one-fifth to the apex with about (15-)18-23(-25) angular-truncate, blunt to sub-acute antrorse teeth or indentations; maximum length of teeth (0.7-)1-1.5 mm at about middle of labellum, evenly diminishing in size towards the base and apex of the labellum, where reduced to shallow gibbous crenulations. *Calli of labellum* in 6 longitudinal, fairly wide-spaced rows, occupying a proximal median zone 6.5-8.5 mm long x 3-3.5 mm wide, extending to within 3.5-4 mm of apex; inner 2 rows each with 10-18 calli, only 3 or 4 calli in outer 2 rows; calli strongly antrorse, 1.3-1.7 mm maximum length (at base of labellum), rather polymorphic, slender-stalked and clavate-globose in each row against the base of the column, others changing to laterally-narrowed stalked calli with elongate foot-like heads, diminishing in size and finally rudimentary towards labellum apex where c. 0.3 mm high. *Colour of labellum* apparently light rose-pink or perhaps yellowish-pink in proximal half

grading to very deep red at apex; margins of lamina light red with red striations along the veins continuous with marginal teeth, the teeth also red; abaxial side of lamina similarly coloured to adaxial side, sometimes with pink suffusions around the claw; calli of labellum concolorous, red or dark red, except for pale yellow (when dry) basal, long-stalked, globose-clavate calli. *Column* erect, strongly curved forward, (10-)13-14 mm long, 4-5 mm wide including axis and wings, with 2 prominent, rounded, swollen, bright yellow glands $\pm 1.5 \times 1$ mm on inner base; axis ± 1.5 mm wide, narrowly winged below, expanding upwards into thick, transparent, rounded, incurved-cucullate wings 2-2.5 mm wide; axis of column green with reddish-purple longitudinal striations or suffusions, especially on inner base where strongly contrasting with yellow glands; *anther* terminal, blunt, 2-3 mm x 2 mm with a minute terminal apiculus 0.3-0.5 mm long; anther flaps green or reddish-purple; pollinia 4, flat, \pm irregularly triangular. *Stigma* 1.7-2 mm diam., immediately behind anther, circular, centrally depressed. *Capsule* not seen.

TYPE COLLECTION:

Nirranda, c. 32 km south-east of Warrnambool, Victoria, 38° 29' S., 142° 50' E., Victorian plant grid K20 or K29, 16.x.1959, *Mathieson family & A. C. Beaglehole 18642* (Holotype: MEL 561935).

SPECIMENS EXAMINED:

Victoria — Nirranda, 27.ix.1959, *Mathieson family & A.C. Beaglehole 18640* (MEL 1530097). Near Warrnambool, 27.ix.1959, *A. C. Beaglehole with Mathieson family s.n.* (MEL 687101). Nirranda, x.1958, *B. A. Fuhrer s.n.* (MEL 561936).

DISTRIBUTION:

Known with certainty only from the type locality (*A. C. Beaglehole* pers. comm., *B. A. Fuhrer* pers. comm.) but another collection of a plant with an unopened flower bud (*A. C. Beaglehole 213000 & E. W. Fink*, 8.ix.1966, MEL 1530098) from Port Campbell National Park, about 25 km south-east of the type locality, may be referable to *C. brachyscapa*.

ECOLOGY:

Little is known of the ecology of *C. brachyscapa*. It used to occur in partially cleared and grazed forest which is now totally cleared (*B. A. Fuhrer* pers. comm.). All collections apparently came from this one locality. Some of the collections have fine white sand and dark grey organic matter adhering to the mycorrhizal zone of the stem just below the bract subtending the leaf. This indicates that the surface soil at least was sandy grey loam likely derived from Tertiary sediments which probably correspond with the mottled duplex soils with ironstone described for the region by Pitt (1977). These originally carried *Eucalyptus obliqua** forest (Pitt, 1977).

AFFINITIES AND TAXONOMIC NOTES:

Caladenia brachyscapa was referred by Willis (1970) to *C. reticulata* R.D. Fitzg. as a "form" from the "Warrnambool district". *C. reticulata sens. strict.* is confined to South Australia (Weber and Bates 1986) and Victoria (cf. Carr 1986) where it is very rare (Carr unpublished data). Several described and undescribed taxa in the *C. reticulata* complex occur in Victoria but *C. brachyscapa* does not seem closely related to any of these.

The salient features of *C. brachyscapa* are the small linear-lanceolate leaf densely clothed with long trichomes, the very short, densely hirsute scape with long eglandular (rarely glandular) trichomes, the short floral segments each with relatively

* Nomenclature follows Forbes *et al.* (1984).

undifferentiated osmophores and the rather polymorphic calli on the labellum which are concolorous except for the longer basal calli.

Of particular significance are the morphology and distribution of the floral trichomes which form the petaline and sepaline osmophores. These glandular secretory trichomes (Carr & Staff unpublished data) which produce the chemical attractants for the thynnid wasp pollinators (see Carr 1986) have important taxonomic utility. They differ in size, number of cells, shape and distribution, features which correlate with the various informal taxonomic alliances in *Caladenia* (sect. *Calonema*) and apparently reflect evolutionary lines.

In species with clearly defined, terminal, clavate sepaline and/or petaline osmophores, the glandular secretory trichomes which make up the osmophore are reduced to the single terminal cells. These are hemispherical, densely packed, and totally obscure the osmophore lamina. *C. reticulata sens. strict.* and its congeners (e.g. *C. calcicola* G. W. Carr, *C. hastata* (Nicholls) Rupp and *C. fitzgeraldii* Rupp) best exemplify this model. With osmophores consisting of sub-dense to loose-packed, 1-3-celled trichomes arranged over the greater part of the lamina of the sepals and petals, the relationships of *C. brachyscapa* are not with the *C. reticulata* alliance. The floral trichomes of *C. brachyscapa* approach those of the taxa in the *C. patersonii* R. Br. complex, but are denser, especially on the distal and terminal parts of the perianth segments.

In many respects *C. brachyscapa* resembles the Tasmanian endemic *C. caudata* Nicholls, though the former is only known from dried material which may lose important features on drying (Carr 1986). Shared features include leaf shape and indumentum, a short scape, flower size and colour (such as can be determined), shape of perianth segments and a broad labellum with very similar marginal teeth. The labellum, however (except in one specimen seen), is not prolonged into a petaline cauda and the long, clavate-globose basal calli in *C. brachyscapa* are not like those in *C. caudata*.

CONSERVATION STATUS:

Caladenia brachyscapa, apparently a narrow endemic, is possibly extinct. However, it may prove to be extant in the Port Campbell National Park or the western coastal fringe of the Otway Ranges.

Caladenia rosella G. W. Carr, sp. nov.

Caladenia pulcherrima F. Muell. Fragm. 5: 93, 101 (1865), nom. invalid, pro parte.

Ex affinitate *C. patersonii* R. Br., differt tamen in proprietum combinatione : foliis brevissimis, comparate latis; scapo brevi; floribus parve pallide ad vivide roseis, moschatis; labello columnaque brevi; callis singularibus; tempore florendi valde praecoqui.

Herb perennating from a \pm globular, annually renewed tuberoid to 9 mm diam. *Stem* subterranean, to c. 6 cm long; tuberoids and stem invested in a dense, finely-fibrous, long-persistent, pale brown tunic derived from previous tuberoid and stem tissue. *Leaf* subtended by an opposite, membranous closed-cylindrical, minutely mucronate, truncate bract 6-8 mm x 9 mm. *Leaf* basal, hirsute, solitary, sessile, stiffly erect or ascending, lanceolate, 4.5-8.5 cm long x 0.5-0.8 cm wide, acute; adaxial and abaxial surfaces green, irregularly blotched or spotted red-purple on basal abaxial one quarter to one third; both surfaces densely to sub-densely hirsute with \pm patent, straight to slightly retrorse, uniseriate, eglandular trichomes to 8.5 mm long; basal cell of trichomes narrowly barrel-shaped, whitish-opaque, microscopically rugose, the remaining 1-5 cells long, extremely fine, transparent; adaxial leaf surface more sparsely hirsute with smaller trichomes. *Scape* (8.5-)10-17 cm long, to 1.8 mm diam., greenish- to reddish-purple throughout, arising at centre of leaf, rigidly erect, \pm straight, hirsute throughout with \pm patent, eglandular trichomes to 6.5 mm long similar to those on leaf, and with shorter scattered

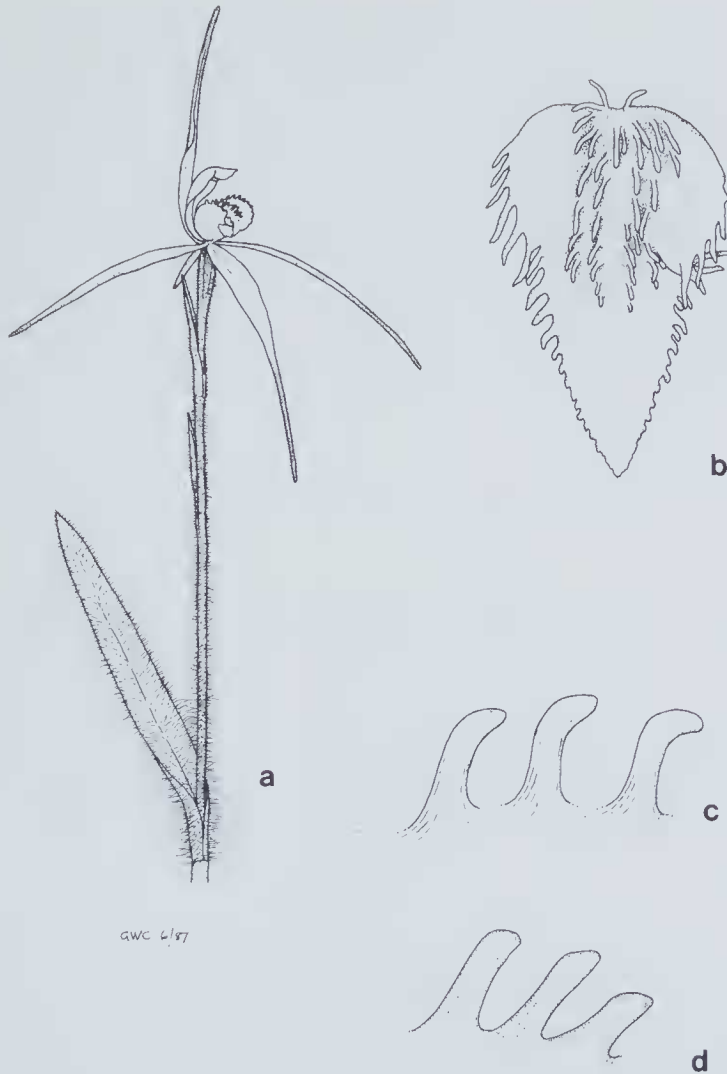


Fig. 2 *Caladenia rosella*. a — plant, above-ground parts, x 1. b — flattened labellum, x 3.75. c — calli from the inner row of calli at about the middle of the labellum, x 7.5. d — marginal teeth of labellum at about the middle of the labellum, x 9.5. c and d from colour transparencies of plants at the type locality.

glandular trichomes, especially above the sterile bract; glandular trichomes similar to eglandular ones but terminated by a minute, \pm transparent to dark reddish-purple, spherical cell. *Sterile bract* above middle of scape, slightly spreading, narrow-lanceolate, acute to acuminate, 15-21.5 mm x 2.3-5 mm wide with strongly involute margins; bract externally hirsute with short, strongly antrorse, eglandular trichomes and with or without scattered glandular trichomes, internally glabrous, green to purplish throughout. *Floral bract* similar, 12-17 mm x 3.5-5.5 mm, embracing the pedicel below, green tinged purple to wholly purple; margins less inrolled. *Flower* solitary, in shades of pale to intense bright pink, scented with a sweet musk-like

floral fragrance perceptible above c. 18° C. *Pedicel* (5-)1-2.5(-3.5) mm long. *Ovary* fusiform, (4.5-)6-10 mm long, 2-3 mm diam., densely glandular-hirsute with trichomes to 2.5 mm long; trichomes with 3-7 cells, patent to slightly antrorse. *Perianth* stiffly spreading. *Dorsal sepal* ± erect to inclined forward (24-)35-46 mm long x (1.5-)2-2.5 mm wide at a maximum in the proximal one-third, the narrow-lanceolate, incurved lamina gradually tapering into a linear-acuminate, involute or channelled cauda; dorsal sepal externally sparsely hirsute at base, with transparent, eglandular 1-5-celled trichomes, remainder of sepal with scattered glandular trichomes below, these becoming dense to very dense in the terminal one third to one fifth but the lamina visible between the trichomes; dorsal sepal internally very sparsely glandular-hirsute at base, ± glabrous on the expanded part of the lamina, then becoming densely hirsute in upper one third to one fifth as on the external surface; glandular floral trichomes which comprise the osmophores 1-3(-5)-celled, dark red or purple, each cell ovoid, multicelled trichomes ± moniliform; dorsal sepal pale to bright pink (nearest RHS Purple Group 76 D in pale specimens, to Red-purple Group 76 D in intensely coloured specimens) usually with a somewhat darker median zone and indistinct striations along the main veins, the abundant glandular trichomes giving a red or reddish-brown hue to the floral segments. *Lateral sepals* (25-)30-45(-47) mm long, ± horizontal to deflexed, ± straight to strongly arcuate, very slightly falcate with a ± flat, lanceolate lamina (2.8-)3.5-4.7 mm wide evenly tapering into a very narrow channelled cauda of c. 1 mm minimum width, about one third to half the length of the sepal; trichomes on lateral sepals the same as those on the dorsal sepal; lateral sepals similar in colour to the dorsal sepal. *Petals* narrow linear-lanceolate, (22-)30-40 mm long x 2-2.5 mm wide, ± flat, the lamina evenly tapering into a fine cauda, ± straight and horizontal to deflexed-arcuate; petaline trichomes similar to those of sepals but sometimes sparser, the margins with rather distant glandular or eglandular cilia; cilia (1-)2-3-celled, to 0.3 mm long, the glandular ones with a small, poorly developed, ± colourless terminal cell; colour of petals similar to that of sepals. *Labellum* articulated on a short claw, 1-1.5 mm long x 1.5-1.8 mm wide, cordate at base, broadly ovate-cordate when flattened, (9-)10-12(-14) mm long x (6.5-)8-10 mm wide including marginal teeth, tapering to an acute or sub-acute apex, carnose, ± erect at base then ± evenly curved forward through about 365°, the apex rolled under and ± obscured by the lamina when viewed from the front; margins of labellum above about the proximal one fifth with projections elongating to strongly antrorse, sub-terete, obliquely truncate, sub-acute, finger-like teeth about the middle of labellum and from these gradually diminishing in size to the apex where they are shallow, gibbous serrations or crenulations; marginal teeth and projections or crenulations (20-)22-25(-30) in number, the longest teeth 1.75-2.2 mm long. *Calli of labellum* in 4 or 6 longitudinal rows, occupying a median zone extending from the base for two thirds to four fifths the length of the labellum; inner 2 rows each with 11-13(-23) calli, adjacent 2 rows each with 8-10(-15) calli, outer rows (when present) with 1-3 calli each; calli either rather long-stalked, arcuate, strongly antrorse with a very slender acute to obtuse foot-like head at maximum development, or relatively undifferentiated and finger-like, to 1.75 mm long, longest towards the base of labellum and diminishing in size towards the apex, ultimately becoming very small wart-like protuberances. *Lamina of labellum* adaxially deep pink in distal half (nearest RHS Red-purple Group 61 A), grading to pale pink proximally, sometimes streaked with darker pink along veins continuous with marginal teeth of labellum; marginal teeth or indentations and calli more intensely deep pink, sometimes slightly bicolorous with paler tips; abaxial surface of labellum deep pink (like adaxial surface) in distal third to half, grading to uniform pale or very pale pink (nearest RHS Purple Group 76 D) proximally, the margins often edged in darker pink and sometimes with a median flush of deep pink extending towards base of labellum and around the claw; labellum waxy in texture. *Column* 9.5-12 mm high and 4.5-5 mm wide viewed from the front, strongly arched from the base to below the anther but erect about the middle, produced forward with the terminal anther held in a ± horizontal

position over the broadest part of the labellum; column axis \pm 1.5 mm wide, deep pink internally and externally with inconspicuous darker longitudinal striations and flecks, with a pair of prominent, strongly contrasting, ovate, swollen yellow glands c. 0.7 mm long on the inner base; axis narrowly winged at base, these wings contracting to their narrowest in the proximal third, then expanding in the upper half into rigid, rounded, strongly cucullate wings 2-2.5 mm wide; wings \pm transparent and colourless to pinkish-transparent throughout, waxy and glossy; axis and wings sparsely hirsute externally in lower half with short 1-3-celled glandular or eglandular trichomes. *Anther* blunt with a minute apiculus, \pm wedge-shaped, 2.5-3 mm long x 2-2.5 mm wide at base; anther flaps green about the axis, the remainder yellow-green, often flushed with deep purplish-red along outer margins; pollinia 4, flat, \pm irregularly triangular. *Stigma* circular, centrally depressed, c. 2 mm diam., green, glistening, situated immediately behind anther; viscidium very narrow, c. 1.5 mm long, touching the anther flaps. *Capsule* (absent from type collection) turgid, broadly fusiform, to 15 mm long x 6.5 mm diam., chartaceous at dehiscence. *Seeds* pale brown.

TYPE COLLECTION:

Hurstbridge, c. 3 km N. of township, Victoria, 37° 36' S., 145° 12' E., Victorian plant grid N34, 22.ix.1985, *G. W. Carr 10391* (Holotype: MEL 1554666).

SPECIMENS EXAMINED:

New South Wales — Albury, no date, *H. Beattie s.n.* (MEL 683868).

Victoria — Evansford, 9.ix.1936, (ex herb.) *G. Lyell s.n.* (MEL 573989). Grampians, no date, *F. Mueller s.n.* (MEL 655209). Maryborough, no date, *Mc Kibbin s.n.* (MEL 610761). Hurstbridge, c. 0.5 km S. of type locality, 9.ix.1981, *G. W. Carr 9027* (MEL 1554667).

DISTRIBUTION:

All old collections are from scattered localities in western and central Victoria (Grampians and Maryborough/Evansford districts) and in New South Wales (Albury district) adjacent to north-eastern Victoria. The only recent collections are from the type locality or to its immediate south. This suggests a formerly wide distribution for *C. rosella* but also that its range has been severely reduced.

ECOLOGY:

The only ecological and biological data available have been collected at or near the type locality where *C. rosella* inhabits dry, mostly west-facing slopes on skeletal soils derived from Silurian sediments. The vegetation is open woodland dominated by old coppice growth of *Eucalyptus goniocalyx*, *E. macrorhyncha* and *E. polyanthemus*. Understorey vegetation is very sparse. Data were recorded from a 10 x 10 m quadrat at the type locality. The quadrat contained 58 vascular species of which the following (apart from the above eucalypts) had the highest cover value (none exceeding 5%): *Acacia acinacea*, * *Aira caryophyllea*, * *Briza maxima*, *Danthonia pallida*, *Daucus glochidiatus*, *Drosera whittakeri*, * *Hypochoeris glabra*, *Microseris scapigera*, *Millotia tenuifolia*, *Poa sieberiana*, *Ranunculus pumilio*, *Senecio tenuiflorus* and *Wahlenbergia stricta* (nomenclature follows Forbes *et al.* (1984)). Ten of the 58 species (including *C. rosella*) were orchids.

The Maryborough and Evansford localities, considered with the habitat at the type locality, suggest that *C. rosella* may have been a component of box-ironbark associations of central and northern Victoria (see Cochrane *et al.* 1968). The Grampians locality is too imprecise to indicate habitat.

AFFINITIES, TAXONOMIC NOTES AND BIOLOGY:

The highly distinctive *C. rosella* belongs to the *C. patersonii* R.Br. *sens. lat.* complex which is characterized by the 1-5-celled glandular trichomes scattered over the surface of all perianth segments, though densest on their distal parts. This contrasts with the *C. reticulata* Fitzg. *sens. lat.* complex in which the 1-celled

glandular trichomes on the sepals and petals are densely aggregated into terminal osmophores (see Carr 1986 and previous discussion here under *C. brachyscapa*).

Of all taxa (described and undescribed) in the *C. patersonii* complex in eastern Australia known to me (Carr unpublished data), *C. rosella* is remarkable for several features. It is the smallest *C. patersonii* relative in the combined dimensions of leaf, scape and floral parts. It is also the earliest flowering of all *Caladenia* sect. *Calonema* species in Victoria, usually being in full flower in mid September. Some specimens at the type locality have been recorded in flower as early as late July and as late as late October. No other Victorian *C. patersonii* relative has such consistently brilliant, pink flowers (though some specimens have pale pink perianths). *C. rosella* is also the only known *Caladenia* sect. *Calonema* which has a musk-like floral fragrance (Carr unpublished data). Features of the labellum, apart from its small size, may also be unique in the eastern Australian *C. patersonii* complex. Unlike those of most of its relatives, the marginal teeth and calli on the lamina are often much less differentiated into a foot-shaped head on a distinct stalk. They are often rather finger-like.

Rupp (1940) published the illegitimate name *C. patersonii* var. *rosea* for a "form of *C. patersonii* of a beautiful heliotrope colour" which came from central Tasmania. He also noted "numerous specimens" collected by Gunn in Tasmania corresponding with his *C. patersonii* var. *rosea* and further remarked that he could find "no other variation from the average form except that the flower was smaller than usual". I have not yet investigated the taxonomic status of this *Caladenia*, but pink Tasmanian *Caladenia* species of the *C. patersonii* complex are represented by specimens at MEL and these may correspond to Rupp's taxon. On ecological grounds, and in view of the distribution of other *Caladenia* taxa, it is unlikely that *C. rosella* occurs in Tasmania.

The pollinator of *C. rosella* has not been observed but it is assumed to be a thynnid wasp attracted for sexual rewards — the pseudocopulatory pollination syndrome (see Carr 1986). Natural pollination has occurred at the type locality but most plants there have been hand pollinated each year. This has evidently yielded good recruitment of seedlings. Fruits ripen and dehisce three to four weeks after pollination.

CONSERVATION STATUS:

Caladenia rosella is in imminent danger of extinction. Only 50-100 plants are now known, and only about six populations have been known to exist in recent times, all at or near the type locality on private property. The only population which still exists for certain is that where the type was collected. Other populations known in recent years have died out as a result of apparently natural mortality or a combination of this, weed invasion, rabbit grazing and activities associated with urbanisation, especially house building. On present trends, weed invasion, especially by the annual grass *Briza maxima* and direct human impacts will cause the destruction of this only known population in a few years. Though the population is maintaining numbers at its core — a result of annual hand pollination — plants on the periphery of the population are being destroyed annually. Apart from hastening the possible extinction of *C. rosella*, this destruction is continually reducing the genetic diversity in the species.

Urgent conservation measures are required involving habitat protection, cultivation including *in vitro* symbiotic seed germination and re-establishment in similar alternative sites.

ETYMOLOGY:

The specific epithet *rosella* is a diminutive of *rosea*, referring to the rose-pink colour.

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